

**Project Name:** \_\_\_\_\_ **Project Number:** \_\_\_\_\_

**CFLHD Project Manager:** \_\_\_\_\_ **A/E or Hwy Design Mgr:** \_\_\_\_\_

**Originator:** \_\_\_\_\_ **Date:** \_\_\_\_\_

Capitalized text represents significant changes or additions from the 15% requirements. However, all requirements are applicable.

<b>30% DEVELOPMENT CHECKLIST</b>	<b>4R Projects Only</b>	<b>ORIGINATOR (Initials)</b>
<b>Originator: "INITIAL" in block to indicate those elements completed, including incorporation of data, place an "I" in the block to indicate those elements that are incomplete, or write "N/A" to indicate those elements not applicable to the project. Resubmit the checklist as necessary until all applicable activities are complete.</b>		
<b>GENERAL</b>		
COMMENTS FROM 15% REVIEW INCORPORATED – 15% PS&E COMMENT & RESPONSE TRACKING FORM SUBMITTED, IF APPLICABLE		
DOCUMENTS ARE IN COMPLIANCE WITH ESTABLISHED CFLHD FORMAT STANDARDS – MATCH AGREED TO FORMAT, PDDM, CADD MANUAL, AND EXAMPLE PLANS.		
CURRENT EDITION OF STANDARD AND DETAIL DRAWINGS USED		
SHEET NUMBERS MAY BE HAND WRITTEN		
PROJECT FOOTPRINT CHECKED AGAINST PROJECT MAPPING TO DETERMINE NEED FOR ADDITIONAL SURVEYS. OBSCURED AREAS IN MAPPING ARE ALSO REVIEWED.		
PLANIMETRIC FEATURES SHOWN IN THE PROJECT FILES ARE COMPARED WITH THE ACTUAL SITE AND THE NEED FOR ADDITIONAL SURVEYS TO TIE IN THE FEATURES ARE DETERMINED (I.E. NEW ACCESS ROADS, CATTLEGUARDS, UTILITIES, AND WETLANDS)		
INSERT DESIGN FILE PATH ON ALL SHEETS (PLACE IN LOWER LEFT CORNER – OUTSIDE OF BORDER)		
ALL REMAINING ALTERNATIVES ARE UPDATED TO REFLECT INFORMATION OBTAINED DURING DEVELOPMENT		
<b>TITLE SHEET</b>		
Project Name & Number shown		
Length of Project shown		
County, State shown		
North Arrow & Graphic Scale shown		
Signature Blocks are appropriate for the funding source		
Location Map shows:		
Proposed Begin & End Stations of Project		
Distances to Nearest Large Destinations		
FP-XX Specification Reference shown		
Key Map of State shown with arrow to approximate project location		
Design Designations included for all major roadways (not only mainline). Including current traffic data, 20-year estimated traffic, design hourly volume, design speed, and truck percentage		
Index to Sheets		
PMIS AND DRAWING NUMBER (NATIONAL PARK SERVICE PROJECTS), STATE CONTROL NUMBERS (STATE HIGHWAY PROJECTS), AND APPLICABLE CLIENT AGENCY IDENTIFICATION NUMBERS		
Metric cell on projects using the International System of Units (metric)		
Plans Prepared By and Prepared For:		
CFLHD's Project Managers and Lead Designers or Consultants Name		
Noticeable stamp stating percentage complete		

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<b>CONVENTIONAL PLAN SYMBOLS AND ABBREVIATIONS</b>			
ALL SYMBOLS AND ABBREVIATIONS USED IN THE PLANS MATCH SHEETS (LATEST EDITION).			
<b>SITE PLAN</b>			
PRELIMINARY SECTION LINES, PROPERTY BOUNDARIES, AND OWNERSHIP; LAND MARKS (SIGNIFICANT PLANIMETRIC FEATURES); HORIZONTAL ALIGNMENT; NORTH ARROW; AND GRAPHIC SCALE			
PREVIOUS CFLHD PROJECT BOUNDARIES AND DATES OF CONSTRUCTION, INCLUDING PROJECTS UNDER CONSTRUCTION. INCLUDE ALL PROJECTS CONSTRUCTED DURING THE PREVIOUS 10 YEARS.			
<b>TYPICAL SECTION(S)</b>			
REFINE THE TYPICAL SECTIONS			
Typical Section – mainline, includes the following:			
Crown			
Roadway Width(s) – Lane, shoulder, foreslope, ditch, and medians			
Edge of Traveled Way and edge of shoulder			
Cross-slopes conform to guidelines in the PDDM			
Provide sufficient dimensions to construct the work			
Construction, Clearing, Topsoil, and Seeding Limits			
STRUCTURAL SECTION IN CONFORMANCE WITH GEOTECHNICAL RECOMMENDATIONS. ALL STRUCTURAL LIFTS SHOWN. FUTURE PAVEMENT, NUMBER OF PAVEMENT LIFTS, ITEM DESCRIPTIONS, PRIME, TACK, AND SEAL COATS SHOWN. ON ALL TYPICAL SECTIONS, SHOW STRUCTURAL SECTION AND NUMBER OF PAVEMENT LIFTS.			
Location of profile grade and hinge points shown			
SHOW TYPICAL SECTIONS FOR GUARDRAIL, PAVED DITCHES, CURB, SUBEXCAVATION, AND MISCELLANEOUS TYPICAL SECTIONS NECESSARY TO DEFINE THE WORK.			
SHOW TYPICAL TRANSITION DETAILS BETWEEN DIFFERENT TYPICAL SECTION TYPES (ADDRESS WIDTH AND STRUCTURAL SECTION DEPTHS)			
Method of superelevation on curves (detail)			
CURVE WIDENING APPLICATION TABLE, SHOWS CURVE RADIUS AND CORRESPONDING WIDENING AMOUNT.			
CUT & FILL SLOPE RATIO SELECTION TABLE – MATCHES PRELIMINARY GEOTECHNICAL RECOMMENDATIONS, PDDM RECOMMENDATIONS, AND USED TO GENERATE CROSS-SECTIONS			
Clear Zone offset shown			
CUT SLOPE ROUNDING AND CLEARING LIMIT DETAILS SHOWN			
Existing roadway typical section (widths, surfacing, and etc.) superimposed – dashed line. This may require a separate detail if too complicated (i.e., for clarity)			
NOTES – GENERAL NOTES PROVIDING ADDITIONAL INFORMATION DESCRIBING THE DETAILS			
<b>SUMMARY OF QUANTITIES</b>			
QUANTITIES FOR ALL KNOWN BID ITEMS ARE COMPUTED (INCLUDES EARTHWORK, SURFACING QUANTITIES, DRAINAGE ITEMS, RETAINING WALLS, GUARDRAIL, CURBS, REVEGETATION, ETC.)			
SUMMARY ALSO INCLUDES: ITEM NUMBERS, ITEM DESCRIPTIONS, AND PAY UNITS (PLAN AND BID)			
SHOW PRELIMINARY BRIDGE ITEMS BASED ON CONCEPTUAL LAYOUT			
INSERT SPREADSHEET FILE LOCATION(S) AND/OR FILE PATH (PLACE IN LOWER LEFT CORNER – OUTSIDE OF BORDER)			

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<b>DRAINAGE SUMMARY</b>		
DEVELOP PRELIMINARY DRAINAGE SUMMARY - ALL NEW CULVERTS FOR ALL NATURAL DRAINAGE AREAS ARE TO BE SHOWN. SHOWING DITCH RELIEF CULVERTS IS OPTIONAL.		
SHOW STATIONING, LENGTH, DIAMETER, END TREATMENTS, AND PERMANENT EROSION CONTROL DEVICES (STANDARD OUTLET PROTECTION; AND SPECIAL OUTLET PROTECTION FOR 1200 MM/48" OR LARGER)		
SUMMARY ALSO INCLUDES: ITEM NUMBERS, ITEM DESCRIPTIONS, AND PAY UNITS		
INSERT SPREADSHEET FILE LOCATION(S) AND/OR FILE PATH (PLACE IN LOWER LEFT CORNER – OUTSIDE OF BORDER)		
<b>EARTHWORK SUMMARY</b>		
PRELIMINARY GRADING SUMMARY AND MASS HAUL DIAGRAM DEVELOPED. GRADING SUMMARY DOES NOT NEED TO BE BROKEN DOWN INTO STATION RANGES. ONLY SHOW TOTAL EARTHWORK VOLUMES.		
ADJUSTMENTS TO HORIZONTAL AND VERTICAL ALIGNMENTS MADE TO ACHIEVE AN OVERALL EARTHWORK BALANCE. IF AN OVERALL BALANCE CANNOT BE ACHIEVED, IDENTIFY BORROW OR WASTE NEEDS.		
EARTHWORK SUMMARY COLUMNS IN ACCORDANCE WITH EARTHWORK REPRESENTATION GUIDELINES		
MAJOR EARTHWORK VOLUME ADJUSTMENTS LISTED IN THE SUMMARY (SHRINK/SWELL, TOPSOIL STRIPPING, SUBEXCAVATION, APPROACH ROADS, CONSERVED MATERIALS, AND RETAINING WALL BACKFILL AND EXCAVATION).		
Mass Haul Diagram graph		
INSERT SPREADSHEET FILE LOCATION(S) AND/OR FILE PATH (PLACE IN LOWER LEFT CORNER – OUTSIDE OF BORDER)		
<b>HIGHWAY DESIGN STANDARDS</b>		
Project design standards determined using CFLHD and AASHTO guidelines (Green Book & Roadside Design Guide). Preliminary design incorporates: design speed, lane width, shoulder width, bridge width, structural design live load, grade, stopping sight distance, cross slope, superelevation, horizontal and vertical clearances, clear zone, roadside barriers, end treatments, and curve widenings.		
Confirm design vehicle		
AASHTO ROADSIDE DESIGN GUIDE REVIEWED FOR DETERMINATION OF ROADSIDE BARRIERS, AND END TREATMENTS.		
ROLLOVER IS LESS THAN OR EQUAL TO 8% BETWEEN TRAVELED WAY AND SHOULDER (PULLOUTS, ADJACENT PARKING AREAS, PARKING LANES, PASSING LANES, ETC.)		
PEDESTRIAN AND BICYCLE SAFETY CONSIDERED: SEPARATION BETWEEN TRAVEL WAY AND BICYCLE/PEDESTRIAN FACILITIES, WIDTH OF FACILITY, AND VERTICAL CLEARANCE DETERMINED.		
INTERACTIVE HIGHWAY SAFETY DESIGN MODEL USED TO EVALUATE THE DESIGN AND REPORT GENERATED SUBMITTED.		
<b>GEOMETRY</b>		
<b><u>HORIZONTAL ALIGNMENT – REFER TO AASHTO POLICY</u></b>		
HORIZONTAL ALIGNMENT REVISED BASED ON REVIEWS, ENVIRONMENTAL WORK, AND COMMENTS		
HORIZONTAL ALIGNMENT ADJUSTED TO BEST FIT TOPOGRAPHY, MINIMIZE ENVIRONMENTAL AND VISUAL IMPACTS, AND TO MINIMIZE OVERALL PROJECT CONSTRUCTION COSTS		
HORIZONTAL ALIGNMENT USES CURVILINEAR ALIGNMENT CONCEPTS, THE USE OF MINIMUM CURVATURE IS AVOIDED WHEREVER POSSIBLE, AND FLATTER CURVES ARE GENERALLY USED.		
HORIZONTAL ALIGNMENT ADJUSTED TO FACILITATE CONSTRUCTION AND TRAFFIC (MAJOR STRUCTURES, RETAINING WALLS)		
THE ALIGNMENT FOLLOWS THE NATURAL CONTOURS INSTEAD OF HAVING LONG TANGENTS SLASHING THROUGH THE TERRAIN.		

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ALIGNMENT CONSISTENT WITH DRIVER EXPECTATIONS		
NO SHARP CURVES INTRODUCED AT THE ENDS OF LONG TANGENTS AND NO SUDDEN CHANGES FROM FLAT CURVES TO SHARP CURVES		
FLATTER CURVES OR LONG TANGENTS ARE TRANSITIONED TO SHARPER CURVES THROUGH A SUCCESSION OF EVER INCREASING CURVES. THE CURVE RADIUS AND SUPERELEVATION OF ADJACENT CURVES LIMIT THE DIFFERENCE IN DESIGN SPEED.		
ATTEMPT TO USE VERY FLAT CURVATURE ON LONG HIGH FILLS		
SMALL DEFLECTION ANGLES HAVE LONG CURVES		
SUFFICIENT DISTANCE IS PROVIDED BETWEEN CURVES FOR SUPERELEVATION RUNOFF (SUM OF THE RUNOFF LENGTHS) OR FOR SPIRALS.		
BROKEN-BACK OR COMPOUND CURVES ARE NOT USED, UNLESS UNAVOIDABLE SITUATIONS JUSTIFY USE. REASONING FOR USE OF SUCH CURVES IS DOCUMENTED.		
COMPOUND CURVES, THE DEGREE OF THE SHARPER CURVE IS NOT MORE THAN 1.5 TIME THAT OF THE FLATTER CURVE		
THE MINIMUM RADIUS OF CURVATURE MEETS THE REQUIREMENTS FOR THE DESIGN SPEED AND $E_{MAX}$ . MINIMUM RADIUS FOR CURVATURE SHOULD BE AVOIDED WHERE PRACTICAL.		
CURVE WIDENING IS INCLUDED FOR SHARPER CURVES AND THE WIDENING IS CORRECTLY LOCATED WITH RESPECT TO THE CURVE.		
ADEQUATE STOPPING SIGHT DISTANCE IS PROVIDED FOR ALL HORIZONTAL CURVES AND IT HAS BEEN ADJUSTED ACCORDING TO GRADE. THE DISTANCE IS DOCUMENTED.		
ADEQUATE PASSING SIGHT DISTANCE IS PROVIDED WHERE REQUIRED. THE DISTANCE IS DOCUMENTED.		
ALIGNMENT ADJUSTED FOR TIE IN WITH APPROACH ROADS, PARKING AREAS, ETC.		
ALL COORDINATE GEOMETRY CHECKED FOR TANGENCY (NO NON-TANGENT CURVES), ANGLE POINTS ARE UNACCEPTABLE. CURVE PARAMETERS REVIEWED.		
AVOID REVERSE CURVES, SPIRALS, AND CHANGES TO HORIZONTAL ALIGNMENT ON STRUCTURES.		
<b><u>VERTICAL ALIGNMENT – REFER TO AASHTO POLICY</u></b>		
VERTICAL ALIGNMENT REVISED BASED ON REVIEWS, ENVIRONMENTAL WORK, AND COMMENTS		
VERTICAL ALIGNMENT ADJUSTED TO BEST FIT TOPOGRAPHY, MINIMIZES ENVIRONMENTAL AND VISUAL IMPACTS, AND MINIMIZES OVERALL PROJECT CONSTRUCTION COSTS.		
THE GRADE LINE IS ROLLED TO TAKE ADVANTAGE OF THE TOPOGRAPHY AND TO REDUCE CUT AND FILL HEIGHTS WHERE POSSIBLE. ROLLER COASTER OR HIDDEN DIPS ARE AVOIDED		
VERTICAL ALIGNMENT ADJUSTED FOR CULVERT COVER REQUIREMENTS.		
MAXIMUM GRADIENT NOT EXCEEDED.		
MINIMUM DITCH GRADE OF 0.5 PERCENT IS USED, 1.0 PERCENT PREFERRED		
ADEQUATE PASSING OPPORTUNITIES HAVE BEEN PROVIDED IF REQUIRED (PASSING LANES, PULLOUTS, SHOULDERS)		
CREST CURVES MEET STOPPING SIGHT DISTANCE REQUIREMENTS		
CREST CURVES MEET PASSING SIGHT DISTANCE, IF REQUIRED.		
SUBSTANTIAL LENGTHS OF MOMENTUM GRADES HAVE BEEN EVALUATED FOR THEIR EFFECT ON TRAFFIC OPERATIONS		
ON LONG GRADES AN ATTEMPT HAS BEEN MADE TO PLACE THE STEEPEST GRADES AT THE BOTTOM AND FLATTEN THE GRADES NEAR THE TOP.		
SAG CURVES MEET THE HEADLIGHT SIGHT DISTANCE REQUIREMENTS.		
BROKEN BACK OR FLAT CURVES ARE AVOIDED		
VERTICAL ALIGNMENT ADJUSTED FOR TIE IN WITH APPROACH ROADS, PARKING AREAS, ETC.		

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AVOID SAG VERTICAL CURVES AND CHANGES TO VERTICAL ALIGNMENT ON STRUCTURES.			
<b><u>HORIZONTAL AND VERTICAL ALIGNMENT RELATIONSHIPS</u></b>			
THE HORIZONTAL CURVATURE AND GRADES ARE BALANCED (I.E. FLATTER CURVES USED WITH FLATTER GRADES AND SHARPER CURVES WITH STEEPER GRADES). ON TWO-LANE ROADS, THE NEED FOR SAFE PASSING SECTIONS OFTEN SUPERSEDES THE DESIRABILITY FOR A WELL-COORDINATED LINE AND GRADE.			
TANGENT GRADE SUPERIMPOSED ON TANGENT LINE, AND VERTICAL CURVES ON HORIZONTAL CURVES.			
HORIZONTAL CURVES LEAD VERTICAL CURVES WHEN THEY ARE SUPERIMPOSED. THE LENGTH OF THE VERTICAL CURVE SHOULD PREFERABLY APPROACH THAT OF THE HORIZONTAL CURVE. HORIZONTAL CURVES ARE NOT HIDDEN BEHIND CREST VERTICAL CURVES.			
SHARP HORIZONTAL CURVATURE AND PROFILE GRADE IS AS FLAT AS POSSIBLE AT INTERSECTIONS WHERE SIGHT DISTANCE IS IMPORTANT.			
SHARP HORIZONTAL CURVATURE NOT INTRODUCED NEAR THE BOTTOM OF A STEEP GRADE APPROACHING OR NEAR THE LOW POINT OF A SAG VERTICAL CURVE.			
MINIMUM RADIUS HORIZONTAL CURVES ARE NOT SUPERIMPOSED ON PRONOUNCED CREST OR SAG VERTICAL CURVES.			
THE ALIGNMENT ENHANCES SCENIC VIEWS, WHETHER NATURAL OR MANMADE. THE HIGHWAY SHOULD HEAD TOWARD THOSE VIEWS THAT ARE OUTSTANDING, IT SHOULD DESCEND TOWARD THOSE FEATURES OF INTEREST AT A LOW ELEVATION, AND IT SHOULD ASCEND TOWARD THOSE FEATURES BEST SEEN FROM BELOW OR IN SILHOUETTE AGAINST THE SKY.			
<b><u>SUPERELEVATION</u></b>			
THE MAXIMUM SUPERELEVATION RATE ( $E_{MAX}$ ) MEETS THE GUIDELINES FOR THE SPECIFIC ROADWAY TAKING INTO CONSIDERATION CLIMATE, URBAN OR RURAL, DESIGN SPEED, ETC.			
THE SUPERELEVATIONS, SUPERELEVATION RUNOFFS, AND TANGENT RUNOUT LENGTHS MEET THE GUIDELINES FOR $E_{MAX}$ DESIGN SPEED AND RADII.			
THE ROTATION POINT OF SUPERELEVATION SHOWN AND CONSISTENT WITH CFLHD GUIDELINES.			
THE SUPERELEVATION RUNOUT RELATIVE GRADIENT MATCHES THOSE OF THE RUNOFFS.			
THE SUPERELEVATION RUNOFF LENGTHS LOCATED CORRECTLY WITH RESPECT TO THE END OF CURVE.			
SUPERELEVATION AT STRUCTURES IS CONSISTENT WHERE POSSIBLE			
<b>PLAN AND PROFILE PLAN SHEETS</b>			
<b><u>Plan</u></b>			
PLAN UPDATED TO INCLUDE ALL COMMENTS AND OBSERVATIONS FROM THE 15% FIELD REVIEW			
INFORMATION SHOWN IS CLEAR AND CONCISE. SYMBOLOGY IS NOT CLUTTERED.			
BEGINNING AND END OF PROPOSED CONSTRUCTION SHOWN			
IDENTIFIED AND REFERENCED TO PROFILE WITH ARROW			
STATIONS OF TERMINUS POINTS SHOWN			
NORTH ARROW (EACH SHEET)			
TOWNSHIP, RANGE, AND SECTION NO.'S (only on projects with Right-of-Way)			
Updated preliminary horizontal alignment			
Curve Data – curve name, delta, radius, tangent length, curve length, spiral lengths, and superelevation shown for each curve			
Edge of Existing Roadway Shown			

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Limits of Disturbance shown (includes, Cut & Fill Slope Stake, Rounding, & Clearing, Drainage Structures, Approach Roads, and Temporary traffic diversions)		
PRELIMINARY RIGHT-OF-WAY LIMITS SHOWN – EXISTING R/W AND OWNERSHIPS		
Control Points – Point number and symbology (elevations not shown)		
NEW AND EXISTING CULVERTS		
ALL NEW CULVERTS FOR ALL NATURAL DRAINAGE AREAS ARE TO BE SHOWN. SHOWING DITCH RELIEF CULVERTS IS OPTIONAL.		
IDENTIFY BOUNDARIES OF HISTORIC, CULTURAL, AND NATURAL RESOURCES THAT REQUIRE PROTECTION OR SPECIAL TREATMENT. ADD NOTE TO PLANS STATING THAT REFERENCES TO HISTORIC, CULTURAL, AND NATURAL RESOURCES WILL BE REMOVED FROM THE PLANS AT THE 70% SUBMITTAL AND REPLACED WITH CONSTRUCTION NOTES FOR THE PROTECTION OF SITE.		
Planimetric features		
Existing Creeks and Rivers w/Correct Names		
SYMBOLS USED MATCH STANDARD SYMBOL SHEET. NEW SYMBOLS ARE SHOWN IN A LEGEND		
PULLOUT/PARKING AREA		
SHOW CONCEPTUAL LAYOUT DESIGN DETAILS		
Road Approaches		
Public road intersections have preliminary design		
Show location of minor roads with standard symbol (type and class)		
REVIEW APPROACH ROAD GRADE AND CONNECTION WITH MAINLINE ROADWAY TO HELP DETERMINE ADJUSTMENTS TO APPROACH ROAD LOCATION AND MAINLINE HORIZONTAL AND VERTICAL ADJUSTMENTS		
Show preliminary guardrail, retaining wall, and paved ditch locations with symbols, no text.		
Existing Utilities (power, phone, & buildings). Show all utilities mapped during the S1, S2, and U1 activities.		
Index contour lines show elevations (elevations are readable)		
PLACE THE NOTE: "THE ALIGNMENT AND GRADE AS SHOWN HEREON ARE SUBJECT TO ADJUSTMENT"		
<b><u>Profile</u></b>		
PROFILE UPDATED TO INCLUDE ALL COMMENTS AND OBSERVATIONS FROM THE 15% FIELD REVIEW		
Existing ground line shown and labeled		
Proposed profile grade shown and labeled – maximum gradient not exceeded.		
Length of Vertical Curves, K-Values, and stopping sight distance shown		
Grid elevations		
Profile grade agrees with Typical Section grade point location		
VPI's Stations and Elevations		
CULVERT LOCATIONS AGREE WITH PLAN SHEETS AND DRAINAGE SUMMARY		
CULVERT SYMBOL(S) SHOWN		
TEXT SHOWS STATION, CULVERT DIAMETER AND NUMBER OF BARRELS. SHOWING LENGTH IS OPTIONAL		
CORRECT CULVERT SYMBOL AND SCALE IS USED		
HYDRAULIC INFORMATION FOR LARGE CULVERTS, 1200MM (48") AND ABOVE (DESIGN FLOW, DRAINAGE BASIN AREA, ETC.) SHOWN		
SHOW RETAINING WALL FACE OUTLINE AND TOTAL WALL FACE AREA QUANTITY		

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SHOW STRUCTURE LAYOUT SHAPE			
SHOW PRELIMINARY LOW WATER CROSSING LOCATIONS			
<b>HYDRAULICS</b>			
INCORPORATE ALL PRELIMINARY HYDRAULICS RECOMMENDATIONS			
<b>H2 activity – PERFORM PRELIMINARY HYDRAULICS AND ANALYSIS</b> CONDUCT FINAL FLOOD PLAIN, PRELIMINARY ROADWAY AND PRELIMINARY BRIDGE HYDRAULIC ANALYSIS. DEVELOP A DRAFT HYDRAULICS REPORT.			
<b>GEOTECHNICAL</b>			
<b>G2 activity – Geotechnical Investigation</b> Earthwork, bridge foundations, retaining wall, landslide, and material source investigations <i>This activity began during the POST 15% activities and will conclude after bridge foundation investigation (conducted after the final TS&amp;L is approved)</i>			
<b>ENVIRONMENT</b>			
REVIEW THE CURRENT ENVIRONMENTAL DOCUMENTS FOR THE PROJECT. BECOME FAMILIAR WITH THE ENVIRONMENTAL POLICY, IMPACTS, AND ISSUES ASSOCIATED WITH THE PROJECT. SUPPORT THE ENVIRONMENTAL PROCESS AS NECESSARY			
ENVIRONMENTAL MITIGATION MEASURES AND COMMITMENTS IDENTIFIED IN THE ENVIRONMENTAL DOCUMENT ARE INCORPORATED INTO THE DESIGN.			
REVIEW COMMENTS FROM PREVIOUS REVIEWS ARE INCORPORATED.			
<b>E2 activity – Document Preparation</b> PERFORM ADDITIONAL STUDIES, RESEARCH, ANALYSES, AND EVALUATIONS NECESSARY FOR DOCUMENT PREPARATION. USE DATA AND ANALYSES TO PREPARE ENVIRONMENTAL DOCUMENT (DRAFT) FOR SIGNATURE. <i>THIS ACTIVITY WILL CONTINUE THROUGH THE 30% DESIGN DEVELOPMENT PHASE.</i>			
<b>TEMPORARY TRAFFIC CONTROL</b>			
IDENTIFY AREAS WHERE DETOURS MAY NEED TO BE CONSTRUCTED (MAJOR STRUCTURES), WHERE PART WIDTH CONSTRUCTION IS NOT POSSIBLE WITHOUT TRAFFIC DELAYS/CLOSURES AND/OR COSTLY MITIGATION (RETAINING WALLS), AND ALTERNATE ROUTES FOR TRAFFIC			
<b>ROAD APPROACHES</b>			
UPDATE AND REFINE PRELIMINARY HORIZONTAL AND VERTICAL ALIGNMENTS OF MAJOR INTERSECTIONS.			
<b>PARKING AREAS</b>			
UPDATE AND REFINE PRELIMINARY LAYOUT OF PARKING AREAS (INCLUDE STRIPING FOR LARGE PARKING AREAS)			
TURNING AND BACK-UP MOVEMENT, STALL AND ISLE WIDTHS ARE REVIEWED FOR SUFFICIENCY			
<b>EROSION CONTROL</b>			
RESEARCH AND PREPARE A LIST OF CFLHD AND LOCAL BEST MANAGEMENT PRACTICES FOR CONSTRUCTION ACTIVITIES FOR USE ON EROSION CONTROL AND REVEGETATION PLANS			
INCORPORATE CFLHD EROSION CONTROL DETAIL SHEETS SHOWING THE TYPICAL MATERIALS, INSTALLATION, AND DIMENSIONS OF THE EROSION CONTROL DEVICES PROPOSED. IDENTIFY ADDITIONAL EROSION CONTROL DETAIL SHEETS AND BEGIN DEVELOPMENT.			

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IDENTIFY LOCATIONS FOR SEDIMENT BASINS, INCLUDING SIZE REQUIREMENTS FOR THE BASINS.		
<b>MAJOR STRUCTURES</b>		
<b>B2-1 ACTIVITY, STRUCTURAL SELECTION REPORT</b>		
PROVIDE PRELIMINARY TS&L SKETCH(S), INCLUDING ALTERNATIVES, IF ANY (SEE BRIDGE CHECKLISTS).		
DEVELOP STRUCTURAL SELECTION REPORT		
<b>OTHER LARGE STRUCTURES</b>		
PROVIDE SEPARATE PLAN SHEETS FOR MAJOR CULVERTS, CULVERTS GREATER THAN 1.75 METER/72" DIAMETER		
DEVELOP PRELIMINARY TEMPORARY SHORING TO ACCOMMODATE TRAFFIC AND FACILITATE CONSTRUCTION		
<b>UTILITIES</b>		
<b>U1 activity – Utility Identification and Depiction</b>		
This activity includes the compilation of utility facilities from available records and field locations. <i>This activity began prior to the 15% design development phase and concludes with the 30% submittal. Included in this activity are the mapping of the utilities completed in activity S1 (15% submittal)</i>		
<b>SURVEY</b>		
<b>S2 activity – Supplemental Survey</b>		
Obtain Supplemental Survey Data and perform quality control. Note: These activities involve supplemental mapping and may include additional utility locations. <i>This activity began at the end of the 15% design development and continues through the 30% design development phase</i>		
<b>STANDARD DRAWINGS</b>		
APPLICABLE FLH STANDARD DRAWINGS INCLUDED, CURRENT VERSION		
APPLICABLE CFLHD DETAIL DRAWINGS INCLUDED, CURRENT VERSION		
<b>ROADWAY CROSS-SECTIONS</b>		
CUT AND FILL SLOPES IN ACCORDANCE WITH THE GEOTECHNICAL MEMORANDUM		
CROSS-SECTIONS MATCH TYPICAL SECTION AND CUT & FILL SLOPE RATIO SELECTION TABLE		
INTERMEDIATE STATIONS ARE INCORPORATED INTO THE CROSS-SECTIONS AT CHANGES IN SUBGRADE WIDTH (I.E. GUARDRAIL TERMINAL LOCATIONS, CULVERT INLETS, CURVE WIDENING, PULLOUTS, ETC.). LOCATE CHANGES IN TEMPLATE WIDTH ON 10 OR 20 METER (25' OR 50') STATIONS WHERE POSSIBLE. PROVIDE CROSS-SECTIONS ON 10 METER (25') INTERVALS THROUGH RETAINING WALLS AND ON CENTERLINE CURVES WITH A RADIUS OF 75 METERS (250') OR LESS.		
Existing ground		
Proposed cross-section showing all structural section layers		
Curve widening, paved ditches, curbs, retaining walls, guardrail, etc. is incorporated		
Slope ratios for all slopes outside of subgrade shoulder		
Superelevation rates (m/m or ft/ft) between subgrade shoulders		
Station, design grade, subgrade, and original ground elevations		
Centerline symbol		
HORIZONTAL LOCATION OF EXISTING AND PROPOSED RIGHT-OF-WAY LIMITS		



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HORIZONTAL AND VERTICAL LOCATION OF UTILITIES		
Grid elevations and offset distances		
<b>CULVERT CROSS-SECTIONS</b>		
CROSS-SECTIONS MATCH TYPICAL SECTION AND CUT & FILL SLOPE RATIO SELECTION TABLE		
CROSS-SECTIONS SHOW END TREATMENTS, INCLUDING RIPRAP AND INLET AND OUTLET DITCHES.		
CULVERT IS LOCATED TO MATCH THE NATURAL STREAM GRADIENT AND PROPER COVER IS ACHIEVED		
CULVERTS STATION AND SKEW AGREE WITH PLAN AND PROFILE SHEET		
TEXT SHOWS STATION, CULVERT DIAMETER, AND NUMBER OF BARRELS. SHOWING LENGTH IS OPTIONAL.		
CULVERT IS DRAWN PROPORTIONAL TO GRID		
EXISTING GROUND		
PROPOSED CROSS-SECTION (DRAWN ALONG ALIGNMENT OF CULVERT)		
SLOPE RATIOS SHOWN FOR ALL SLOPES OUTSIDE OF SUBGRADE SHOULDER		
SUPERELEVATION RATES (M/M OR FT/FT) BETWEEN SUBGRADE SHOULDERS		
HORIZONTAL LOCATION OF EXISTING AND PROPOSED RIGHT-OF-WAY LIMITS SHOWN		
HORIZONTAL AND VERTICAL LOCATION OF UTILITIES SHOWN		
SHOW GUARDRAIL, RETAINING WALLS, AND PAVED DITCHES SYMBOLS/SHAPES		
GRID ELEVATIONS AND OFFSET DISTANCES		
<b>RIGHT-OF-WAY</b>		
UPDATED TITLE/OWNER SEARCH OF ALL PRIVATE PROPERTY COMPLETED		
PRELIMINARY BOUNDARY PLAT PRODUCED		
<b>R2 activity – Boundary Compilation</b> THE COMPILATION OF TITLE INFORMATION INTO BOUNDARY PLAT, AND SUPPLEMENTAL FIELDWORK, RESEARCH, OWNERSHIP UPDATES		
<b>PLANS CONTAIN THE FOLLOWING SHEETS</b>		
TITLE SHEET		
CONVENTIONAL PLAN SYMBOLS AND ABBREVIATIONS		
SITE MAP		
TYPICAL SECTIONS		
MISCELLANEOUS TYPICAL SECTION DETAILS		
SUMMARY OF QUANTITIES		
DRAINAGE SUMMARY		
GRADING SUMMARY AND MASS DIAGRAM		
MAINLINE PLAN AND PROFILE		
MAJOR PUBLIC INTERSECTING ROAD PLAN AND PROFILE		
PRELIMINARY TS&L SKETCH(S)		
CFLHD SOIL EROSION CONTROL DETAILS (I.E. SILT FENCE, SEDIMENT LOGS, ETC.)		
ROAD CONNECTIONS DETAILS		
EMBANKMENT BENCHING		

30% DEVELOPMENT CHECKLIST		4R Projects Only	ORIGINATOR (Initials)
Originator: "INITIAL" in block to indicate those elements completed, including incorporation of data, place an "I" in the block to indicate those elements that are incomplete, or write "N/A" to indicate those elements not applicable to the project. Resubmit the checklist as necessary until all applicable activities are complete.			
PLACED RIPRAP DETAIL			
PIPE CULVERT STANDARD PLANS			
DROP INLET SPECIALS			
UNDERDRAIN DETAILS			
PAVED DITCH DETAILS			
GUARDRAIL STANDARDS			
FENCE AND GATE DETAILS			
CATTLEGUARD DETAILS			
WIDENING FOR CATTLEGUARD AND GATE			
CFLHD TEMPORARY TRAFFIC CONTROL DETAIL DRAWINGS			
MAINLINE CROSS-SECTIONS			
CULVERT PIPE CROSS-SECTIONS			
<b>ESTIMATE</b>			
30% COST ESTIMATE			
ESTIMATE TO INCLUDE ALL IDENTIFIED PAY ITEMS, INCLUDING: EARTHWORK, SURFACING QUANTITIES, BRIDGES, DRAINAGE ITEMS, RETAINING WALLS, GUARDRAIL, CURBS, REVEGETATION, ETC.			
PRELIMINARY UNIT PRICE ANALYSIS FOR ALL IDENTIFIED PAY ITEMS			
DETERMINE THAT THE ESTIMATE IS WITHIN THE PROGRAMMED AMOUNT			
TRAFFIC CONTROL, EROSION CONTROL, ETC, CAN BE COMBINED AND A PERCENTAGE OF THE TOTAL PROJECT USED TO COMPUTE COST AS A LUMP SUM FOR EACH CATEGORY.			
Preliminary cost estimate for bridges is on a square area basis			
Cost estimate may be provided in a spreadsheet format or Engineer's Estimate program			
<b>DELIVERABLES</b>			
30% PLANS			
30% COST ESTIMATE			
PRELIMINARY UNIT PRICE ANALYSIS FOR IDENTIFIED BID ITEMS			
DRAFT HYDRAULICS REPORT			
UPDATED TITLE/OWNER SEARCH AND RIGHT-OF-WAY EXHIBIT			
PRELIMINARY BOUNDARY PLAT			
PRELIMINARY TS&L SKETCH(S)			
STRUCTURAL SELECTION REPORT			
QA/QC CERTIFICATION OF COMPLIANCE			
30% DEVELOPMENT CHECKLIST			
15% COMMENT AND RESPONSE TRACKING FORM			
PRELIMINARY HIGHWAY DESIGN STANDARDS FORM			
INTERACTIVE HIGHWAY SAFETY DESIGN MODEL REPORT, INCLUDING NARRATIVE EXPLAINING RESULTS			
DRAFT CONSTRUCTION SCHEDULE (CPM)			
UPDATE DESIGN TECHNICAL MEMORANDUM – CONTINUE THE DOCUMENTATION OF THE ISSUES AND CONCERNS FOR THE PROJECT			

<b>30% DEVELOPMENT CHECKLIST</b>		<b>4R Projects Only</b>	<b>ORIGINATOR (Initials)</b>
<b>Originator: "INITIAL" in block to indicate those elements completed, including incorporation of data, place an "I" in the block to indicate those elements that are incomplete, or write "N/A" to indicate those elements not applicable to the project. Resubmit the checklist as necessary until all applicable activities are complete.</b>			
UPDATED MAPPING FROM S2 ACTIVITY			
UTILITY MAPS			
RECOMMENDATIONS FOR FIELD WORK (I.E. RIGHT-OF-WAY BOUNDARIES, TOPOGRAPHICAL SURVEYS, PLANIMETRICS, ETC.)			
Environmental E2 activity			
Survey Reports from additional surveys/evaluations, if necessary			
Locations of additional resources, if any			
Internal Environmental Document for review			
External Draft Document for review by agencies			
Press ready environmental document for signature by FHWA Division Engineer			
Memo to FHWA Division Engineer requesting signature of environmental document			
Mitigation measures			
<b>FIELD REVIEW</b>			
<b>SC30 activity - Alignment Staking For 30% Field Review</b>			
Alignment staked on 40 meter (100 foot) stations for tangents and 50 foot (20 meters) for curves. As a minimum stake the beginning, end, and center point on short curves			
Topography on mapping and DTM is ground truthed by visual observation, hand level, and cloth tape by designer at critical locations to confirm that the terrain is representative or not.			
Prepare agenda for field review			
PREPARE A LIST OF DISCUSSION TOPICS FOR THE FIELD REVIEW			
CHECK UTILITIES – VISIBLE, CROSSING, APPROACHES, ETC.			
DETERMINE ALL PROPOSED DITCH RELIEF CULVERT LOCATIONS			
REVIEW PROPOSED DESIGN AT ALL NATURAL DRAINAGES			
REVIEW GEOTECHNICAL RECOMMENDATIONS			
REVIEW OVERALL FOOTPRINT (IMPACTS)			
REVIEW INTERSECTIONS, MAILBOX AREAS, WALL AREAS, ETC.			
Produce a master relined plan set with field review comments for inclusion in the 50% design			
Prepare trip report			